



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/518,125	07/05/2005	Thomas Kruspe	414-13268B-WOCPUS	6719
44871	7590	09/08/2006	EXAMINER	
MADAN, MOSSMAN & SRIRAM, P.C.			FETZNER, TIFFANY A	
2603 AUGUSTA			ART UNIT	
SUITE 700			PAPER NUMBER	
HOUSTON, TX 77057			2859	

DATE MAILED: 09/08/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/518,125

Applicant(s)

KRUSPE ET AL.

Examiner

Tiffany A. Fetzner

Art Unit

2859

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 19-42 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 19-42 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 15 December 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>9/15/05 &amp; 12/15/04</u> . | 6) <input type="checkbox"/> Other: ____.  |

## DETAILED ACTION

### *Priority*

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.
2. Applicant's instant application filed July 5<sup>th</sup> 2005 is a national stage entry of pct/us03/18952. Applicant's instant application filed July 5<sup>th</sup> 2005 is also a CIP of US patent 6,844,727 B2; which is a CIP of US patent 6,452,388 filed June 20<sup>th</sup> 2002, issued to **Reiderman et al.**, September 17<sup>th</sup> 2002. However, because the features of the magnetic core formed from a material having a "high internal magnetostrictive damping" and "low magnetostriction" are not aspects of the parent US application 09/605,463 which is now US patent 6,452,388 issued to **Reiderman et al.**, September 17<sup>th</sup> 2002, Applicant cannot rely on the filing date of the parent **Reiderman et al.**, application for priority. The priority date for these above-mentioned features is the filing date of the instant CIP application of June 20<sup>th</sup> 2002. Therefore **Kruspe** US patent **6,326,785 B1** issued December 4<sup>th</sup> 2001, filed July 18<sup>th</sup> 2000 and noted on applicant's December 15<sup>th</sup> 2004 IDS constitutes valid prior art against the instant application.
3. The examiner notes that "magnetostrictive ringing" as a problem is mentioned and corrected for by a particulate core structure, in **Reiderman et al.**, [See col. 6 lines 59-65; col. 3 lines 17-23; and col. 2 lines 4-8 of US patent 6,452,388 issued to **Reiderman et al.**,] however "high internal magnetostrictive damping" and "low magnetostriction" **are not equivalent to** "magnetostrictive ringing". The examiner notes that 'damping' is the opposite of 'ringing'. Additionally, "magnetostrictive ringing" is an indication of and that entirely different concepts, neither of which are taught in the parent US application 09/605,463, which is now US patent **6,452,388** issued to **Reiderman et al.** The only disclosure and teaching of these limitations is found in applicant's current instant application filed June 20<sup>th</sup> 2002. The limitations of "high internal magnetostrictive damping" and "low magnetostriction" constitute new matter in relation to the parent US application 09/605,463 which is now US patent **6,452,388** issued to **Reiderman et al.**, therefore the effective priority date for these features is June 20<sup>th</sup> 2002.

***Information Disclosure Statement***

4. The information disclosure statement (IDS) submitted on 12/15/2004 and 9/15/2005 are in compliance with the provisions of 37 CFR 1.97. Accordingly, the examiner has considered the information disclosure statements. The initialed and dated information disclosure statements are attached to this office action.

***Drawings***

5. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because:

**A)** Reference character “3” has been used to designate both a ‘borehole’ in **Figure 1** [See page 7 line 14 and page 7 line 26] and ‘an isoline’ in **figure 3** [See page 10 lines 23-24]. drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement-drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either “Replacement Sheet” or “New Sheet” pursuant to 37 CFR 1.121(d). If the examiner does not accept the changes, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

**B)** **Figures 1 through 9 should be designated by a legend such as --Prior Art--** because only that which is old is illustrated. See MPEP § 608.02(g). The examiner notes that, these Figures are the same Figures as in **Reiderman et al.**, PCT WO 02/01256 A1 published January 3<sup>rd</sup> 2002, and in **Reiderman et al.**, US patent 6,452,388 B1 (i.e. applicant’s Issued US parent application) These Figures are prior art in the instant application. Figures 10-13 are the inventive figures of the instant application, which are drawn to the newly added material. The old figures should be labeled prior art.

6. Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled “Replacement Sheet” in the page header (as per 37 CFR 1.84(c)) so

as not to obstruct any portion of the drawing figures. If the examiner does not accept the changes, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

**C)** The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because **Figures 7, 10, and 12** include the following reference character(s) not mentioned in the description:

**C1)** In the description of **Figure 7** component **71** is not mentioned. [See page 11 lines 10-18]

**C2)** In the description of **Figure 10** components **101** and **103** are not mentioned. [See page 13 lines 22-27]

7. **C3)** In the description of **Figure 12** component **201**, is not mentioned. [See page 14 lines 13-19] Corrected drawing sheets in compliance with 37 CFR 1.121(d), or amendment to the specification to add the reference character(s) in the description in compliance with 37 CFR 1.121(b) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement-drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the examiner does not accept the changes, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

**D)** The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference isolines mentioned in the description. [See page 14 lines 4-11 which teaches that Figure 7 illustrates isolines, however no isolines are readily apparent in Figure 7.] Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement-drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New

Sheet" pursuant to 37 CFR 1.121(d). If the examiner does not accept the changes, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

***Claim Rejections - 35 USC § 102***

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

9. **Claims 19-20, 23-26, 35, and claims 36-42** are rejected under **35 U.S.C. 102(a)** as being anticipated by **Reiderman et al.**, WO 02/01256 published January 3<sup>rd</sup> 2002

10. With respect to **Claim 19, Reiderman et al.**, WO 02/01256 published January 3<sup>rd</sup> 2002 teaches and shows "An apparatus for evaluating electrical properties of an earth formation surrounding a borehole" [See figure 1 page 5 lines 6-16, in combination with page 5 lines 14-15 where the stability of the magnetic and electrical characteristics in the presence of temperature changes are accounted for, as well as], the apparatus comprising: "(a) a transmitting antenna assembly for conveying a radio frequency electromagnetic field into said earth formation; [See figure 1, page 1 lines 11-26; page 3 lines 13-14] "and (b) a receiving antenna assembly for receiving a signal resulting from interaction of said electromagnetic field with said earth formation; [See page 1 lines 2-3 where the NMR sensing apparatus corresponds to an NMR receiver; page 1 lines 18-23; and page 3 lines 14-16] "wherein at least one of the antenna assemblies includes at least one magnetic core formed from a material having (I) high internal magnetostrictive damping, and, (II) low magnetostriction" [See page 4 lines 10-16 where the virtue of the particulate structure of the preferred powdered core material which results in a

"reduction / elimination of 'magnetostrictive' ringing" directly implies that the core is "formed from a material having (I) high internal magnetostrictive damping, and, (II) low magnetostriction" because magnetostrictive damping is an equivalent term for "reducing 'magnetostrictive' ringing".] Additionally because 'magnetostriction' is defined as the property of the core material to change shape within an applied magnetic field, and in **Reiderman et al.**, reference" the shape of the core geometry does not exceed a value of 5", [See page 7 lines 16-25, with page 5 lines 1-15] This teaching directly implies that "the magnetostriction is low" because in all of the earlier prior art references the effective permeability as a result of core shape (i.e. magnetostriction) is "high" or "greater than 5". See also page 3 lines 16-23.]

11. With respect to **Claim 35, Reiderman et al.**, WO 02/01256 published January 3<sup>rd</sup> 2002 teaches and shows "An apparatus for evaluating electrical properties of an earth formation surrounding a borehole" [See figure 1 page 5 lines 6-16, in combination with page 5 lines 14-15 where the stability of the magnetic and electrical characteristics in the presence of temperature changes are accounted for, as well as], the apparatus comprising: "(a) a transmitting antenna assembly for conveying a radio frequency electromagnetic field into said earth formation; [See figure 1, page 1 lines 11-26; page 3 lines 13-14] "and (b) a receiving antenna assembly for receiving a signal resulting from interaction of said electromagnetic field with said earth formation; [See page 1 lines 2-3 where the NMR sensing apparatus corresponds to an NMR receiver; page 1 lines 18-23; and page 3 lines 14-16] "wherein at least one of the antenna assemblies includes at least one magnetic core formed from a non-ferritic powdered soft magnetic material having high saturation flux density and a non-conductive bonding agent" [See page 3 lines 16-18 and page 6 lines 16-20; with page 5 lines 23-26], "said magnetic core having a magnetic permeability  $\mu_m$  less than 500" [See page 6 lines 17-20] "and wherein said saturation flux density is greater than about 0.4 T" [See page 12 claim 13, page 8 lines 7-15; page 13 line 1].

12. With respect to **Claim 20, and corresponding method claim 28, Reiderman et al.**, WO 02/01256 published January 3<sup>rd</sup> 2002 teaches "said material has a high internal damping", because the particulate structure of the material itself reduces / "dampens"

magnetostrictive ringing. [See page 4 lines 10-14; page 9 lines 4-22] **Reiderman et al.**, WO 02/01256 published January 3<sup>rd</sup> 2002 also teaches that the material "comprises a powdered soft magnetic material" [See page 5 lines 23-26]. The same reasons for rejection, that apply to **claim 19**, also apply to **claim 20**, and need not be reiterated.

13. With respect to **Claim 23**, **Reiderman et al.**, WO 02/01256 published January 3<sup>rd</sup> 2002 teaches "said material has a high internal damping", because the particulate structure of the material itself reduces / "dampens" magnetostrictive ringing. [See page 4 lines 10-14; page 9 lines 4-22] **Reiderman et al.**, WO 02/01256 published January 3<sup>rd</sup> 2002 also teaches that the material "has a large area within a hysteresis loop associated with magnetostrictive deformation of the material." [See figure 8 which shows this feature] The same reasons for rejection, that apply to **claims 19**, also apply to **claim 23** and need not be reiterated.

14. With respect to **Claim 24**, **Reiderman et al.**, WO 02/01256 published January 3<sup>rd</sup> 2002 teaches that "said at least one antenna core further comprises a non-conductive bonding agent having substantial acoustic decoupling between grains." [See page 4 lines 10-14; page 5 lines 23-26; page 9 lines 4-15 in combination] The same reasons for rejection, that apply to **claims 19, 20**, also apply to **claim 24** and need not be reiterated.

15. With respect to **Claim 25** **Reiderman et al.**, WO 02/01256 published January 3<sup>rd</sup> 2002 shows from figure 1 that "said logging apparatus is adapted to be conveyed on one of (i) a wireline, and, (ii) a drilling tubular". [See figure 1] The same reasons for rejection, that apply to **claim 19**, also apply to **claim 25** and need not be reiterated.

16. With respect to **Claim 26** **Reiderman et al.**, WO 02/01256 published January 3<sup>rd</sup> 2002 teaches that "said material has a low magnetostriction" [See the reasons for rejection given in claim 1]. Additionally **Reiderman et al.**, WO 02/01256 published January 3<sup>rd</sup> 2002 teaches that the material "comprises an amorphous metal" because the trademarked FLUXTROL and trademarked MICROMETALS are "amorphous" materials. The same reasons for rejection, that apply to **claim 19** apply to **claim 26** and need not be reiterated.

17. With respect to **Claim 36**, **Reiderman et al.**, WO 02/01256 published January 3<sup>rd</sup> 2002 teaches that "the magnetic core further comprising dimensions which are related



to the direction of an RF magnetic field produced by the transmitter coil and to the magnetic permeability of the powdered soft magnetic material.” [See page 3 lines 13-33 especially lines 20-23; page 5 line 20 through page 7 line 25] The same reasons for rejection, that apply to **claims 19, 35**, also apply to **claim 36** and need not be reiterated.

18. With respect to **Claim 37, Reiderman et al.**, WO 02/01256 published January 3<sup>rd</sup> 2002 teaches that “the powdered soft magnetic material is conductive and has a maximum grain size to substantially prevent intragranular power loss of said transmitted electromagnetic signal.” [See page 10 claim 3] The same reasons for rejection, that apply to **claims 19, 35**, also apply to **claim 37** and need not be reiterated.

19. With respect to **Claim 38, Reiderman et al.**, WO 02/01256 published January 3<sup>rd</sup> 2002 teaches that “an effective demagnetizing factor of the magnetic core in a direction of the radio frequency magnetic field substantially exceeds the inverse magnetic permeability of the powdered soft magnetic material. [See page 3 lines 19-23] The same reasons for rejection, that apply to **claims 19, 35** also apply to **claim 38** and need not be reiterated.

20. With respect to **Claim 39, Reiderman et al.**, WO 02/01256 published January 3<sup>rd</sup> 2002 teaches that “the core has an effective permeability,  $\mu$ , less than 5, as defined by a first equation,  $\mu = 1 + (\mu_m - 1) / ((\mu_m - 1)D + 1)$ , wherein D, the demagnetizing factor can be estimated from an elliptic equivalent of the cross-section of the core, as defined by a second equation,  $D = S_x / (S_x + S_y)$ , wherein  $S_x$  and  $S_y$  represent the elliptic equivalent dimensions in horizontal and vertical dimensions respectively, in a plane the core.” [See page 6 line 16 through page 7 line 25] The same reasons for rejection, that apply to **claims 19, 35** also apply to **claim 39** and need not be reiterated.

21. With respect to **Claim 40, Reiderman et al.**, WO 02/01256 published January 3<sup>rd</sup> 2002 teaches that “the powdered soft magnetic material possesses a maximum magnetic permeability given a predetermined maximum RF antenna power loss.” [See page 11 claim 7] The same reasons for rejection, that apply to **claims 19, 35**, also apply to **claim 38** and need not be reiterated.

22. With respect to **Claim 41, Reiderman et al.**, WO 02/01256 published January 3<sup>rd</sup>

2002 teaches that "said flux density is greater than that of a magnetic consisting primarily of ferrite." [See page 12 claim 14] The same reasons for rejection, that apply to **claims 19, 35**, also apply to **claim 41** and need not be reiterated.

23. With respect to **Claim 42, Reiderman et al.**, WO 02/01256 published January 3<sup>rd</sup> 2002 teaches that "the magnetic core further comprises relative dimensions that are related to the direction of the RF magnetic field and to the magnetic permeability of the powdered soft magnetic material. [See page 12 claim 15] The same reasons for rejection, that apply to **claims 19, 35**, also apply to **claim 42** and need not be reiterated.

24. **Claims 19-20, 23-26, 35, and claims 36-42** are rejected under **35 U.S.C. 102(e)** as being anticipated by **Reiderman et al.**, US patent **6,452,388 B1** issued September 17<sup>th</sup> 2002, filed June 28<sup>th</sup> 2000. Because this US patent corresponds to the applied **Reiderman et al.**, WO 02/01256 reference. The same reasons as those provided above, as also provided in this reference and need not be reiterated,

25. The applied reference has a **common inventor Arcady Reiderman** with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not the invention "by another," or by an appropriate showing under 37 CFR 1.131. The examiner notes that on the instant application that there are four inventors listed, and that the other three are not inventors of the **Reiderman et al.**, US patent applied. Additionally, the other inventor of the **Reiderman et al.**, US patent applied is not listed as an inventor of the instant application.

#### ***Claim Rejections - 35 USC § 103***

26. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Art Unit: 2859

27. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

28. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

29. **Claims 21, 22, and 27-34** are rejected under 35 U.S.C. 103(a) as being obvious over **Reiderman et al.**, WO 02/01256 published January 3<sup>rd</sup> 2002.

30. With respect to **Claim 27**, **Reiderman et al.**, WO 02/01256 published January 3<sup>rd</sup> 2002 also teaches "the method comprising: (a) using a transmitting antenna assembly on a tool conveyed in said borehole for transmitting a radio frequency electromagnetic field into said earth formation;" [See figure 1, page 1 lines 11-26; page 3 lines 13-14] "(b) using a receiving antenna assembly for receiving a signal resulting from interaction of said electromagnetic field with said earth formation;" [See page 1 lines 2-3 where the NMR sensing apparatus corresponds to an NMR receiver; page 1 lines 18-23; and page 3 lines 14-16] "(c) using a core for at least one of the antenna assemblies for enhancing the received signals, said core formed from a material having at least one of (I) high internal magnetostrictive damping, and (II) low magnetostriction." [See page 4 lines 10-16 where the virtue of the particulate structure of the preferred powdered core material which results in a "reduction / elimination of 'magnetostrictive' ringing" directly implies that the core is "formed from a material having at least one of (I) high internal

magnetostrictive damping, and, (II) low magnetostriction" because magnetostrictive damping is an equivalent term for "reducing 'magnetostrictive' ringing".] Additionally because 'magnetostriction' is defined as the property of the core material to change shape within an applied magnetic field, and in **Reiderman et al.**, reference" the shape of the core geometry does not exceed a value of 5", [See page 7 lines 16-25, with page 5 lines 1-15] This teaching directly implies that "the magnetostriction is low" because in all of the earlier prior art references the effective permeability is a result of core shape (i.e. magnetostriction which expands or contracts a core's shape) is "high" or "greater than 5". [See also page 3 lines 16-23.]

31. **Reiderman et al.**, WO 02/01256 published January 3<sup>rd</sup> 2002 lacks a direct statement of "A method of determining a 'resistivity parameter' of an earth formation surrounding a borehole", however, it would have been obvious to one of ordinary skill in the art at the time that the invention was made that this feature is suggested within the scope of what is taught by the reference because the parameter  $\mu$  or permeability in the given context of the **Reiderman et al.**, reference is interpreted by the examiner to be a determined 'resistivity parameter' even though the term "resistivity parameter" itself is lacked by the reference. Specifically within the context of the reference the most appropriate definition of the term  $\mu$  or permeability is "the property of a magnetizable substance that determines the degree in which the magnetizable substance modifies the magnetic flux in the region occupied by the magnetizable substance within a magnetic field". Therefore a material with a low  $\mu$  or permeability of 20-30, [See page 6 lines 17-18] is intrinsically highly resistive to magnetic flux, and either does not alter, or minimally alters, the magnetic flux of an existing magnetic field; while a material with a high  $\mu$  or permeability of 500-1000 [See page 6 lines 18-20] has a low resistivity to modifying the existing magnetic flux within a magnetic field.) The examiner also notes that the preferred powdered core material taught by **Reiderman et al.**, WO 02/01256 published January 3<sup>rd</sup> 2002 reduces or eliminates "magnetostrictive ringing"[See page 4 lines 2-16] Magnetostrictive ringing (i.e. the expanding or contracting of a magnetizable material placed within a magnetic field) is conventionally known to be a consequence of

the changing interaction between a magnetizable material and the magnetic flux within a magnetic field, therefore the teaching of reducing / eliminating "magnetostrictive ringing" also implies that the powdered core material is highly resistive to, and does not interact with the existing magnetic flux within a magnetic field, "of an earth formation surrounding a borehole, [See figure 1 page 5 lines 6-16, in combination with page 4 lines 14-15, page 6 line 16 through page 9 line 22 and equation 1] Additionally the equation for  $\mu$  or permeability [See page 6 line 28 through page 7 line 25] depends on the vertical and horizontal dimensions  $S_x$  and  $S_y$  of equation 2, which also supports the examiner's position that the  $\mu$  or permeability of the **Reiderman et al.**, reference represents a 'resistivity parameter' even though the term "resistivity parameter" itself is lacked by the reference, since a resistivity measurement has both a longitudinal / vertical and horizontal / length / cross-sectional components.

32. With respect to **Claim 28**, **Reiderman et al.**, WO 02/01256 published January 3<sup>rd</sup> 2002 teaches "said material has a high internal damping", because the particulate structure of the material itself reduces / "dampens" magnetostrictive ringing. [See page 4 lines 10-14; page 9 lines 4-22] **Reiderman et al.**, WO 02/01256 published January 3<sup>rd</sup> 2002 also teaches that the material "comprises a powdered soft magnetic material" [See page 5 lines 23-26]. The same reasons for rejection, which apply to **claims 19, 27** also apply to **claim 28** and need not be reiterated.

33. With respect to **Claim 21**, and **corresponding method claim 29**, it would have been obvious to one of ordinary skill in the art at the time that the invention was made that the **Reiderman et al.**, reference WO 02/01256 published January 3<sup>rd</sup> 2002 lacks directly teaching but does suggest that "said the powdered soft magnetic material is non-conductive" [See page 5 lines 23-26 where the powdered material contains a non-conductive binder, such as epoxy resin] "and has a maximum grain size" (i.e particle size) "to substantially reduce intragranular power loss at a frequency of said radio frequency magnetic field", because although the term "intragranular power loss" is lacked in the main descriptive teachings of the reference, **Reiderman et al.**, WO 02/01256 published January 3<sup>rd</sup> 2002 teaches that "the particle size of the core material

is substantially smaller than the minimum wavelength for acoustic excitation, and does not diminish the efficiency of the RF antenna in the NMR probe. [See page 4 lines 2-14] **Reiderman et al.**, WO 02/01256 published January 3<sup>rd</sup> 2002 also teaches that the particle size is small enough to appear transparent to the RF magnetic field, [See page 5 lines 26-30] These teachings directly implies that the RF magnetic field is substantially unaffected / unaltered by the powdered core material, which implies that there is no RF power lost (i.e. the RF Q-factor, which is an RF power measurement, is negligibly impacted) due to the presence and size of the powdered core material within the antenna" (i.e. including intragranular particles), since a power loss would cause an inherent detectable deviation in an applied magnetic field. The examiner notes that the ability to prevent "intragranular power loss is also a direct aspect of the claims of the **Reiderman et al.**, reference WO 02/01256 published January 3<sup>rd</sup> 2002, therefore the term is within the scope of the teachings of the reference. The same reasons for rejection, and / or obviousness that apply to **claims 19, 20, 27, 28** also apply to **claims 21, 29** and need not be reiterated.

34. With respect to **Claim 22**, and **corresponding method claim 30** it would have been obvious to one of ordinary skill in the art at the time that the invention was made that the **Reiderman et al.**, reference WO 02/01256 published January 3<sup>rd</sup> 2002 lacks directly teaching but does suggest that "the powdered soft magnetic material has a maximum grain size" (i.e. particle size) of "less than half a wavelength of an acoustic wave having a frequency of said radio frequency magnetic field" because **Reiderman et al.**, WO 02/01256 published January 3<sup>rd</sup> 2002 teaches that the particle size is "substantially smaller" than the minimum wavelength for acoustic excitation, and does not diminish the efficiency of the RF antenna in the NMR probe. (i.e. the term "substantially smaller" is interpreted as suggesting less than half a wavelength in the context of the reference), [See page 4 lines 10-14, page 5 lines 26-30]. The same reasons for rejection, and / or obviousness that apply to **claims 19, 20, 27, 28**, also apply to **claims 22, 30** and need not be reiterated.

35. With respect to **Claim 28**, **Reiderman et al.**, WO 02/01256 published January 3<sup>rd</sup> 2002 teaches "said material has a high internal damping", because the particulate

structure of the material itself reduces / "dampens" magnetostrictive ringing. [See page 4 lines 10-14; page 9 lines 4-22] **Reiderman et al.**, WO 02/01256 published January 3<sup>rd</sup> 2002 also teaches that the material "comprises a powdered soft magnetic material" [See page 5 lines 23-26]. The same reasons for rejection, and obviousness that apply to **claims 19, 27** also apply to **claim 28** and need not be reiterated.

36. With respect to **Claim 31**, **Reiderman et al.**, WO 02/01256 published January 3<sup>rd</sup> 2002 teaches "said material has a high internal damping", because the particulate structure of the material itself reduces / "dampens" magnetostrictive ringing. [See page 4 lines 10-14; page 9 lines 4-22] **Reiderman et al.**, WO 02/01256 published January 3<sup>rd</sup> 2002 also teaches that the material "has a large area within a hysteresis loop associated with magnetostrictive deformation of the material." [See figure 8 which shows this feature] The same reasons for rejection, and obviousness that apply to **claims 19, 27**, also apply to **claim 31** and need not be reiterated.

37. With respect to **Claim 32**, **Reiderman et al.**, WO 02/01256 published January 3<sup>rd</sup> 2002 teaches that "said at least one antenna core further comprises a non-conductive bonding agent having substantial acoustic decoupling between grains." [See page 4 lines 10-14; page 5 lines 23-26; page 9 lines 4-15 in combination] The same reasons for rejection, and obviousness that apply to **claims 19, 20, 27, 28** also apply to **claim 32** and need not be reiterated.

38. With respect to **Claim 33**, **Reiderman et al.**, WO 02/01256 published January 3<sup>rd</sup> 2002 teaches that "said material has a low magnetostriction" [See the reasons for rejection given in claim 1]. Additionally **Reiderman et al.**, WO 02/01256 published January 3<sup>rd</sup> 2002 teaches that the material "comprises an amorphous metal" because the trademarked FLUXTROL and trademarked MICROMETALS are "amorphous" materials. The same reasons for rejection, and obviousness that apply to **claims 19, 27** also apply to **claim 33** and need not be reiterated.

39. With respect to **Claim 34**, **Reiderman et al.**, WO 02/01256 published January 3<sup>rd</sup> 2002 shows from figure 1 that "said logging apparatus is adapted to be conveyed on one of (i) a wireline, and, (ii) a drilling tubular". [See figure 1] The same reasons for rejection, and obviousness that apply to **claims 19, 27**, also apply to **claim 34** and need

not be reiterated.

40. **Claims 21, 22, and 27-34** are rejected under **35 U.S.C. 103(a)** as being obvious over **Reiderman et al.**, US patent **6,452,388 B1** issued September 17<sup>th</sup> 2002, filed June 28<sup>th</sup> 2000. Because this US patent corresponds to the applied **Reiderman et al.**, WO 02/01256 reference. The same reasons as those provided above, as also provided in this reference and need not be reiterated,

41. The applied reference has a common **inventor Arcady Reiderman** with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art only under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 103(a) might be overcome by: (1) a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not an invention "by another"; (2) a showing of a date of invention for the claimed subject matter of the application which corresponds to subject matter disclosed but not claimed in the reference, prior to the effective U.S. filing date of the reference under 37 CFR 1.131; or (3) an oath or declaration under 37 CFR 1.130 stating that the application and reference are currently owned by the same party and that the inventor named in the application is the prior inventor under 35 U.S.C. 104, together with a terminal disclaimer in accordance with 37 CFR 1.321(c). This rejection might also be overcome by showing that the reference is disqualified under 35 U.S.C. 103(c) as prior art in a rejection under 35 U.S.C. 103(a). See MPEP § 706.02(l)(1) and § 706.02(l)(2). The examiner notes that on the instant application that there are four inventors listed, and that the other three are not inventors of the **Reiderman et al.**, US patent applied. Additionally, the other inventor of the **Reiderman et al.**, US patent applied is not listed as an inventor of the instant application.

### ***Double Patenting***

42. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA



Art Unit: 2859

1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970);and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

**A timely filed terminal disclaimer in compliance with 37 CFR 1.321( c )** may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

43. **Claims 19-42** are rejected under the judicially created doctrine of non-statutory obvious double patenting over **claims 1-5, 7, 9, 10, 11, 15-20, and 22-24** of **Reiderman et al.**, U. S. Patent No. **6,452,388 B1** since the claims, if allowed, would improperly extend the "right to exclude" already granted in the patent.

44. The subject matter claimed in the instant application is fully disclosed in the patent and is covered by the patent since the patent and the application are claiming common subject matter, as follows:

**A) The newly added independent claims 19, 27, and 35** of the preliminary amendment are broadened independent versions of **independent claims 1, 11, 15 and 25** of the **6,452,388 B1 Reiderman et al.**, patent. Therefore, the claims of the **6,452,388 B1 Reiderman et al.**, patent include the scope of the instant application.

**B) The preliminary amendments Newly added dependent claims 20-23, 24, 25-26, 28-32, 33 and 34** of the instant application correspond to **dependent claims 2-5, 7, 9-10, 16-20, 22, and 23** of the **6,452,388 B1 Reiderman et al.**, patent. The examiner notes that because applicant has broadened the independent claims, with the preliminary amendment, in the instant application, each of these claims is rejected under the doctrine non-statutory obvious double patenting.

45. **Claims 19-42** are rejected under the judicially created doctrine of non-statutory obvious double patenting over **claims 1-15** of **Kruspe et al.**, U. S. Patent **7084625 B2**; which is the issued US patent of the **Kruspe et al.**, U. S. Patent application publication **2005/0127909 A1** published June 16<sup>th</sup> 2005, since the claims, if allowed, would improperly extend the "right to exclude" already granted in the patent.. **Claims 1-25** of

Art Unit: 2859

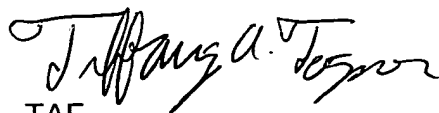
**Kruspe et al.**, U. S. Patent application **11/034,403** publication **2005/0127909 A1** published June 16<sup>th</sup> 2005; also meet **claims 19-42** of the instant application.

### Conclusion

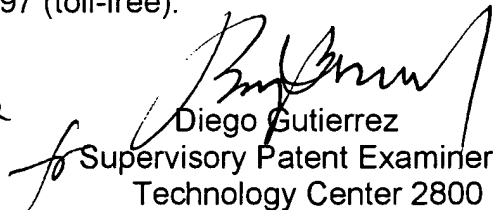
46. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tiffany Fetzner whose telephone number is: (571) 272-2241. The examiner can normally be reached on Monday-Thursday from 7:00am to 4:30pm., and on alternate Friday's from 7:00am to 3:30pm.

47. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Diego Gutierrez, can be reached at (571) 272-2245. The **only official fax phone number** for the organization where this application or proceeding is assigned is **(571) 273-8300**.

48. Information regarding the status of an application may be obtained from the Patent Application information Retrieval (PAIR) system Status information for published applications may be obtained from either Private PMR or Public PMR. Status information for unpublished applications is available through Private PMR only. For more information about the PMR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PMR system contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



TAF  
September 2, 2006



Diego Gutierrez  
for Supervisory Patent Examiner  
Technology Center 2800